Indiana Statewide Model Update, 2030 Forecasts and Levels of Service

INDOT Long Range Planning Section

prepared by

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Major Topics

- 2030 Congestion Deficiencies Analysis
  - Key Assumptions
  - Evaluation Criteria
  - Deficiencies
  - Categorization of Congested Corridors
  - 2025 Plan vs. 2030 Needs

2030 Congestion Deficiencies Analysis

- *Key Assumptions*
  - *Analysis period*
  - *Percent traffic in peak hour (K factor)*
  - *Percent traffic in peak direction (D factor)*

- *Approach*
  - *Make generous but realistic assumptions*
    - ✓ *Greater certainty of deficiencies*
    - ✓ *Not worst case scenario*

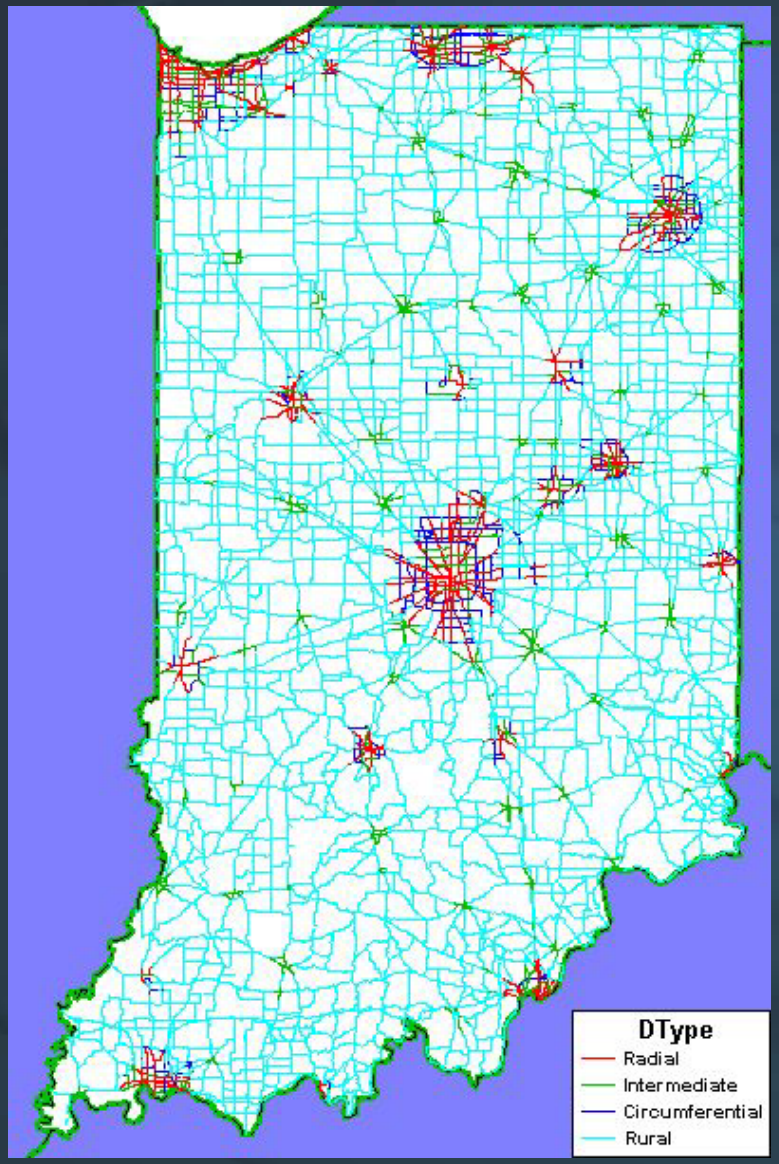
2030 Congestion Deficiencies Analysis

- *Analysis Period*
  - *Average Peak Hour*
    - ✓ *150th-200th highest hour*
- *K factors*
  - *Based on Indiana Data*

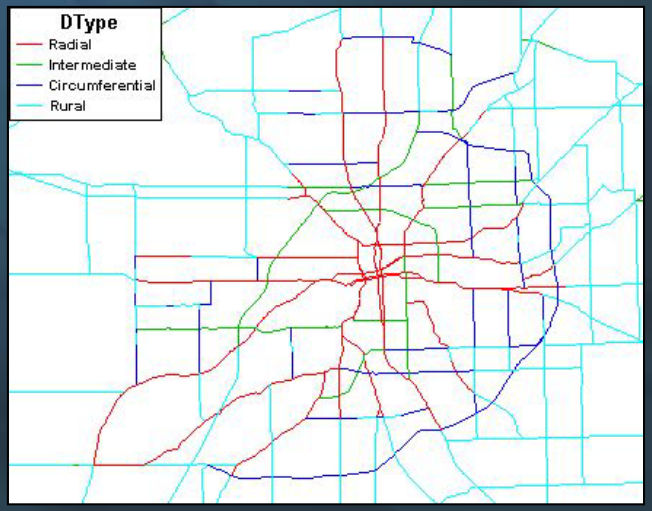
Functional Class	K factor
Rural Interstates	8.5%
Rural Arterials	8.2%
Rural Collectors & Locals	7.6%
Urban Interstates, Freeways & Expressways	8.2%
Urban Arterials, Collectors & Locals	8.0%

Source: Gunawardena and Sinha, 1994

2030 Congestion Deficiencies Analysis



- *D factors*
  - *By functional type*
    - ✓ *Radial – 65%*
    - ✓ *Intermediate – 59%*
    - ✓ *Circumferential – 53%*
    - ✓ *Rural – 55%*



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2030 Congestion Deficiencies Analysis

- *Evaluation Criteria*
  - *Measures of Severity*
    - ✓ *Level of Service from Volume to Capacity Ratio*
    - ✓ *Level of Service from Highway Capacity Manual 2000*
  - *Measure of Magnitude*
    - ✓ *Total Delay (vehicle hours of delay)*

2030 Congestion Deficiencies Analysis

- *Level of Service by Two Methods*
  - *Level of Service by V/C ratio*

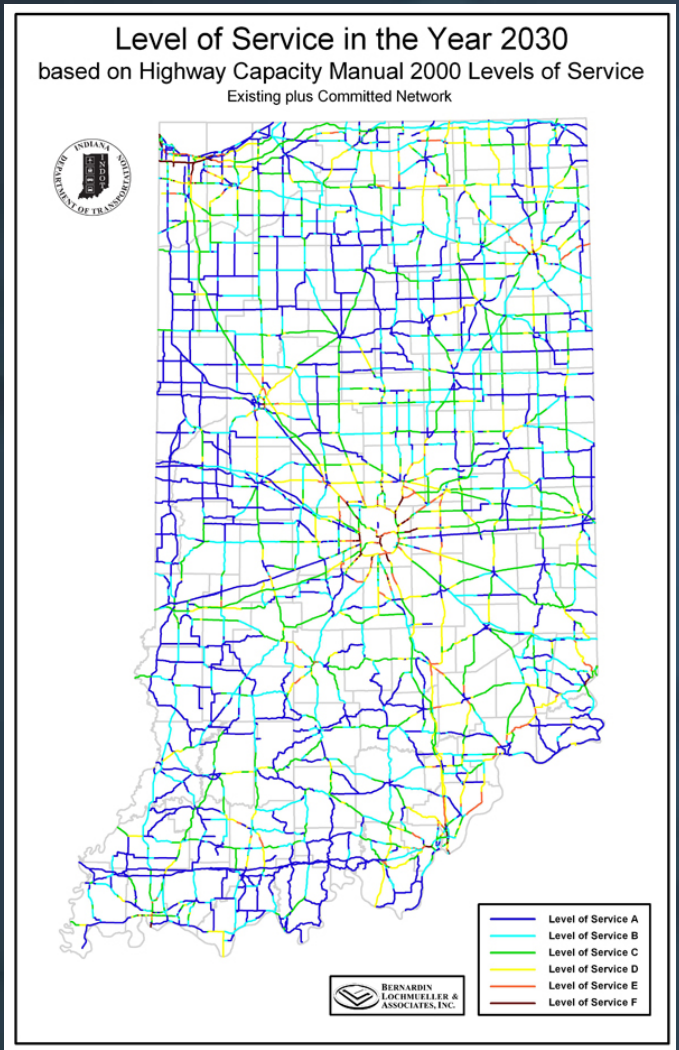
	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
V/C	< 0.26	0.26 - 0.43	0.43 - 0.62	0.62 - 0.82	0.82 - 1.00	> 1.00

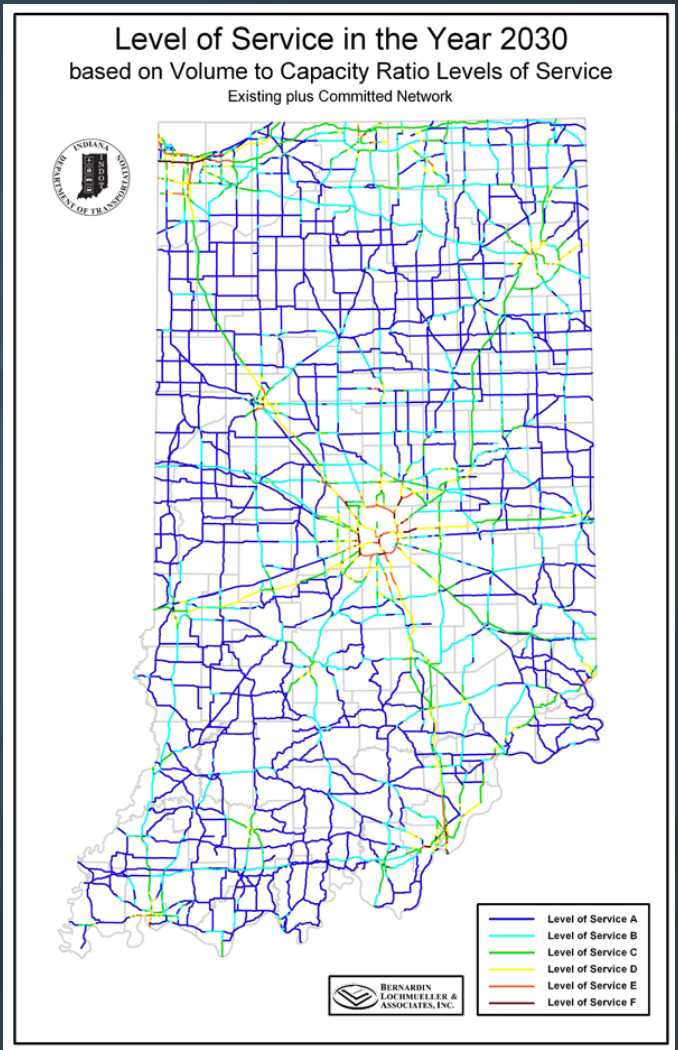
  - *Level of Service by HCM 2000 criteria*

	Freeways/Multilane Divided	Two Lane Rural Highway	
	Flow Density (pc/lane-mile)	Speed/Delay	% Following
LOS A	< 11	None	< 35%
LOS B	11 - 18	< 9%	35 - 50%
LOS C	18 - 26	< 18%	50 - 65%
LOS D	26 - 35	< 27%	65 - 80%
LOS E	35 - 45	> 27%	> 80%
LOS F	> 45	> 1700 pc/hr	

2030 Levels of Service

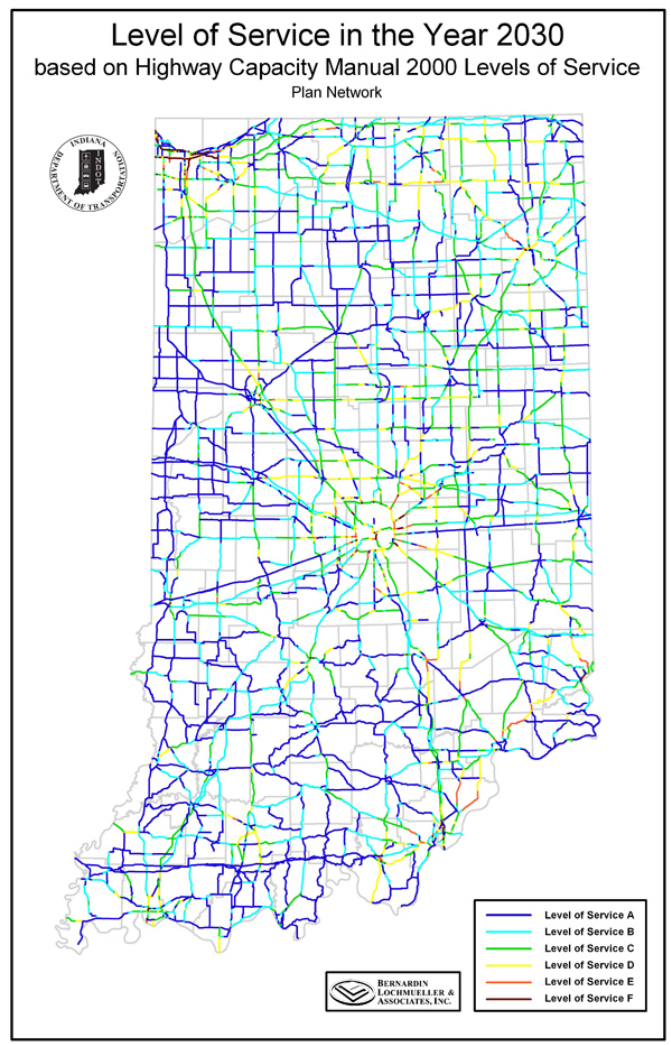
- *Existing plus Committed Network*

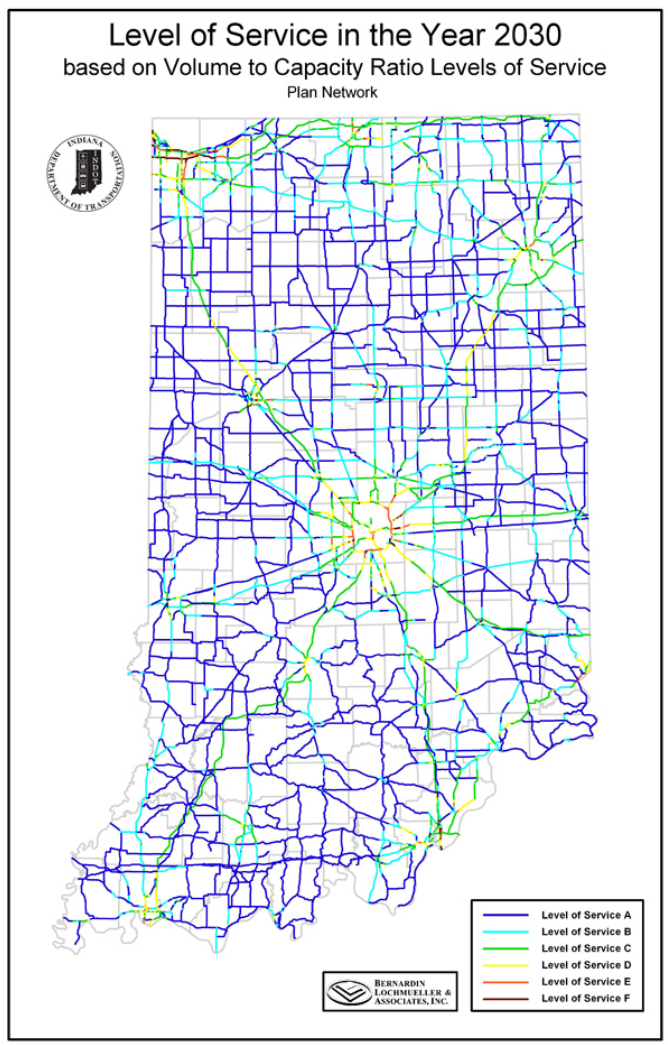




2030 Levels of Service

- *Long Range Plan Network*





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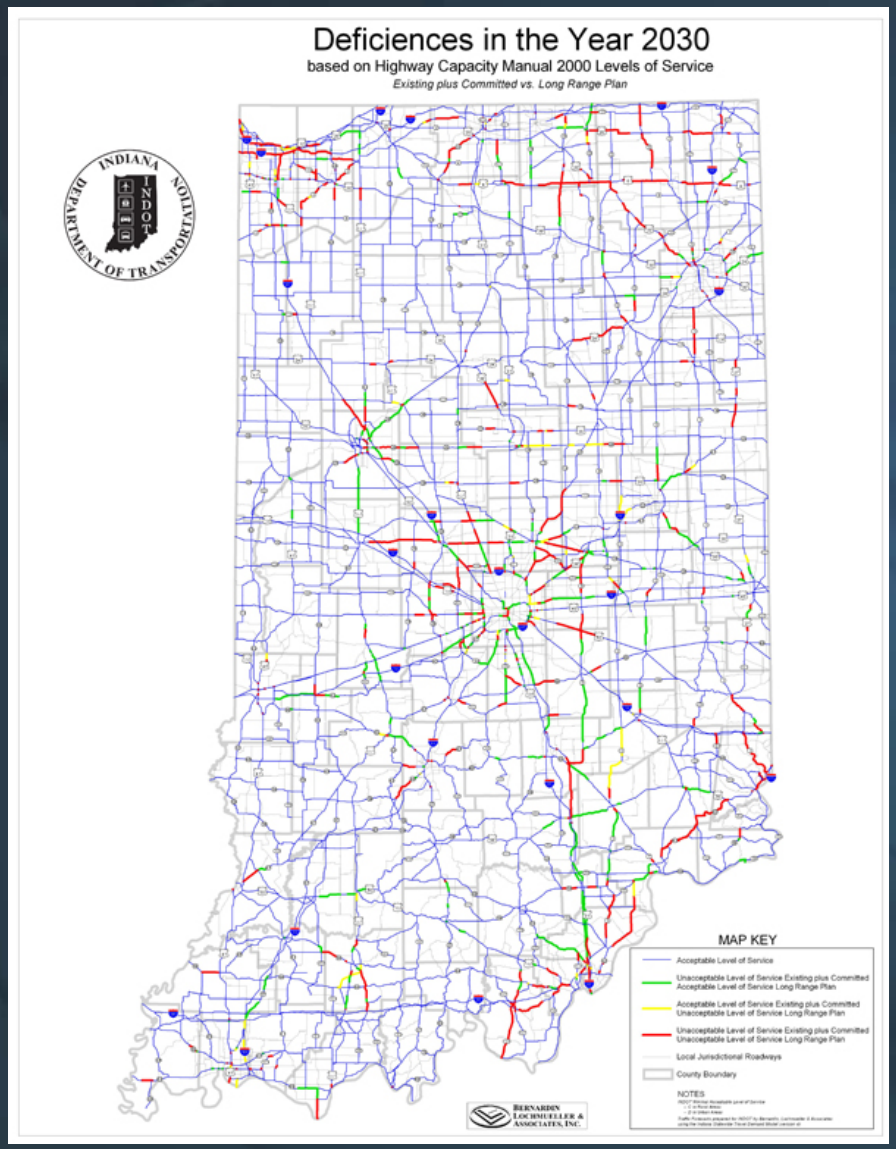
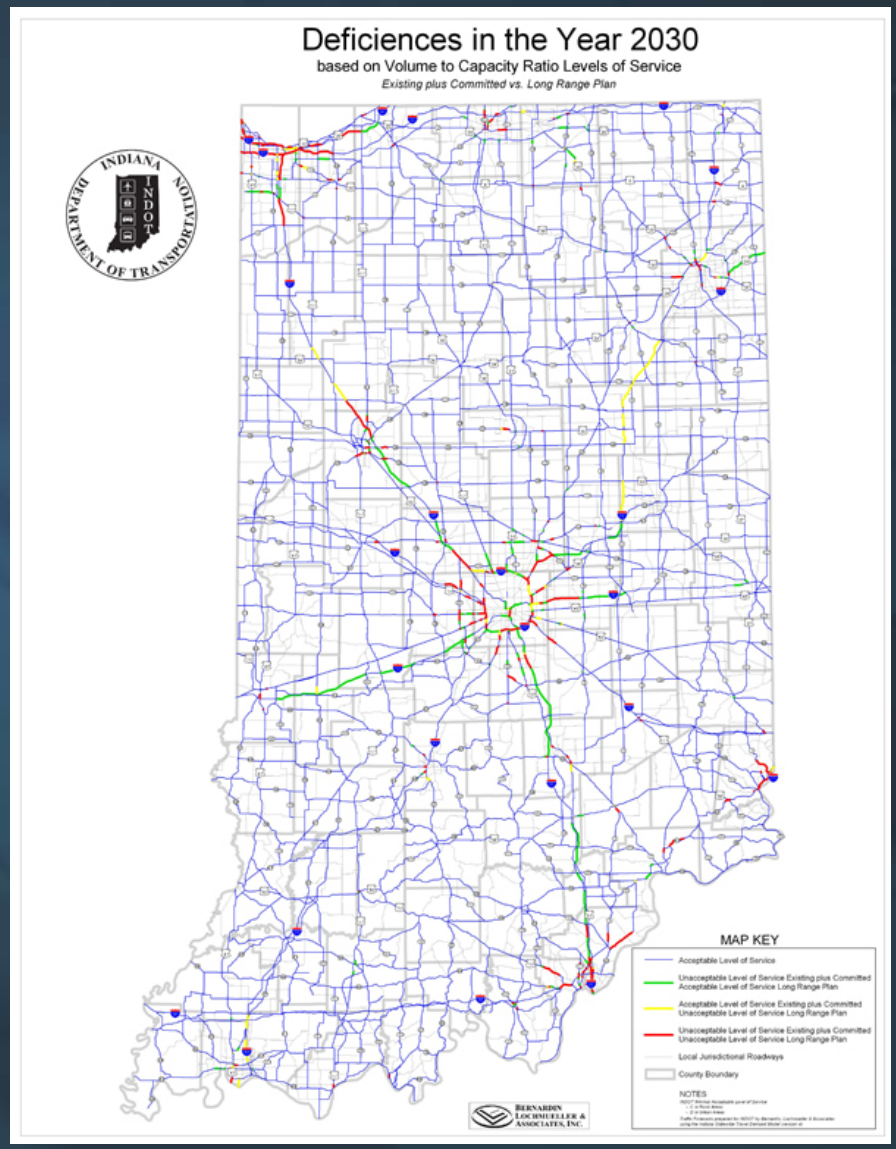
2030 Congestion Deficiencies Analysis





2030 Congestion Deficiencies Analysis

- *Impact of Long Range Plan on Deficiencies*
  - *Deficient road miles reduced from 2,178 to 1,616*
  - *Deficient VMT reduced from 56.4 to 45.6 million*
  - *Total system delay reduced from 173,025 to 134,498 vehicle hours*

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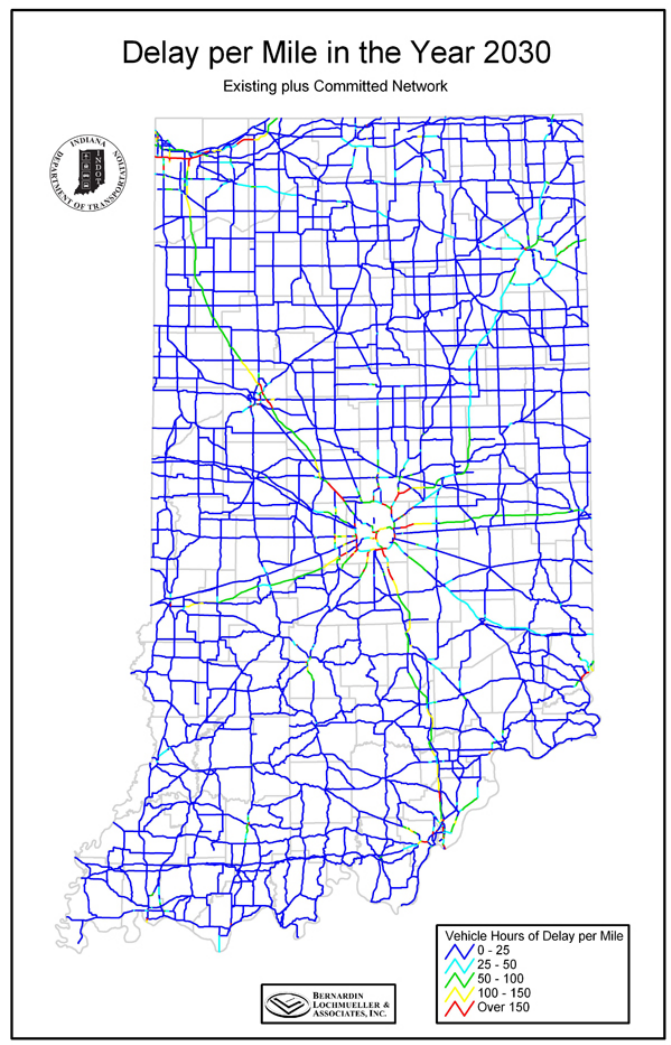
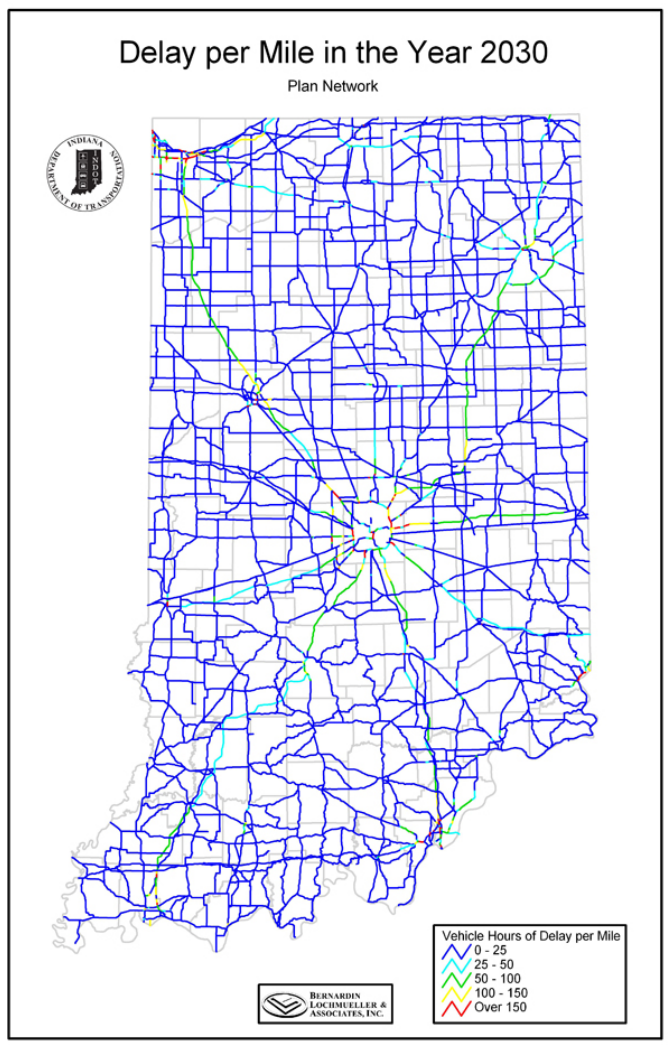
2030 Congestion Deficiencies Analysis

- *Magnitude of Congestion: Delay*





2030 Congestion Deficiencies Analysis

❖ Categorization of Congested Corridors

➢ Existing plus Committed

Delay	LOS E/F	LOS D	LOS A/B/C			
2000+	7	4	2	13	Class I	7
1000+	5	8	8	21	Class II	9
500+	9	9	13	31	Class III	19
250+	8	20	15	43	Class IV	25
0+	37	141	959	1137	Class V	70
	66	182	997	1245	Class VI	156
						286

➢ Long Range Plan

Delay	LOS E/F	LOS D	LOS A/B/C			
2000+	5	1	2	8	Class I	5
1000+	0	10	13	23	Class II	1
500+	6	4	18	28	Class III	18
250+	3	14	28	45	Class IV	20
0+	30	106	1005	1141	Class V	62
	44	135	1066	1245	Class VI	134
						240

2030 Congestion Deficiencies Analysis

- *Classes of Congested Corridors*

Existing plus Committed

Long Range Plan

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2025 Plan vs. 2030 Needs

- *Major statewide corridors*
  - *I-70 Improvements meet needs except east of I-465 into Hancock Co. and I-65 common section.*
  - *I-65 improvements meet needs from north of Clarksville to I-70 common section (improving US 31 as well) and from SR 267 to Lafayette.*
  - *I-65 shows further needs in Clarksville, on the common section with I-70, between I-865 and SR 267, north of Lafayette to SR18/US 231, and in Lake Co. (although US 231 to US 30 looks good).*
  - *I-80, I-90, & I-94 all show deficiencies in Lake and Porter regardless of improvements, but improvements do reduce their severity.*

2025 Plan vs. 2030 Needs

- *Major statewide corridors*
  - *I-69 shows deficiencies from I-465 to SR 238, but improvement between SR 238 and SR 32, while the section from SR 32 to I-469 is approaching LOS D.*
  - *US 24 Fort to Port project remedies deficiencies east of I-469, and the Hoosier Heartland project eliminates SR 25 deficiency.*
  - *US 31 projects show improvements, particularly in Hamilton County.*
  - *US 231 Jasper-Huntingburg bypasses relieve congestion on existing route but may create congestion on SR 162 to I-64; projects between SR 46 and Lafayette look good except perhaps a small section on the north side of Greencastle. Deficiencies are now evident north of Lafayette.*

2025 Plan vs. 2030 Needs

- *Major urban corridors*
  - *I-465 projects bring the loop to just about the minimal acceptable LOS (but may require improvement to I-865).*
  - *I-64 still shows deficiency in Floyd County but it is reduced by planned improvements.*
  - *I-164 may need additional lanes by 2030 given national I-69 traffic.*
  - *US 41 still shows some, albeit lessened, deficiencies in Terre Haute and Evansville despite planned improvements.*
  - *SR 62 (W. Lloyd Expy.) improvements remove deficiencies.*
  - *US 6 Projects address deficiencies in Lake and Porter Cos.*
  - *US 40, US 36, and US 136 still generally show deficiencies west of I-465, and SR 267 begins to show deficiencies as well.*
  - *US 50 shows serious deficiencies in Lawrenceburg, Aurora area.*
  - *SR 37 and SR 67 (I-69 Corridor) show reduced or eliminated deficiencies to the south of I-465.*

2025 Plan vs. 2030 Needs

- *Urban corridors*
  - *US 421 between SR 334 and SR 32 shows improvement, but south of SR 334 to I-465 and north of SR 32 still show some deficiency.*
  - *I-74 may need more capacity on the west out to Pittsboro.*
  - *SR 32 widened section looks good, but west of US 31 shows some trouble.*
  - *SR 238 between SR 67 and SR 37 appears deficient, and SR 38 likewise between Pendleton and Noblesville.*
  - *SR 37 looks good north of I-69 to north of Noblesville but bad from there to Elwood.*
  - *SR 39 through the Martinsville area looks good.*
  - *SR 130 appears deficient.*
  - *US 20 west of US 31 may not meet standards, while the improved section east of the bypass in Elkhart Co. would, but additional improvements may be required further east.*

2025 Plan vs. 2030 Needs

- *More corridors*
  - *US 6 begins to show deficiencies from around US 31 east to Ohio.*
  - *SR 23 between Edison and Cleveland in South Bend/Mishawaka and SR 933 along old US 31 in South Bend and between old and new SR 331 show some deficiencies.*
  - *SR 19 and SR 13 improvements remedy deficiencies.*
  - *US 33 improved southeast of Goshen looks good but improvements may need to go further east.*
  - *US 33 improved northwest of I-69 is good, but then after the project's end shows deficiency to SR 205.*
  - *Some sections of SR 1 and US 27 south of Ft. Wayne may become deficient.*
  - *SR 3 north of Rushville is improved but between SR 46 and US 50 may become deficient.*

2025 Plan vs. 2030 Needs

- *More corridors*
  - *SR 46 projects reduce or eliminate deficiencies throughout its corridor east and west of Bloomington.*
  - *SR 45 improvements outside Bloomington also help there.*
  - *SR 60 projects eliminate deficiencies from Clark into Washington Co.*
  - *SR 66 improvement in Spencer Co. results in reduced or eliminated deficiencies.*
  - *US 50 improvements east of Washington to Ohio eliminate deficiencies in the corridor except in the aforementioned area near Ohio.*
  - *SR 62 shows deficiencies between Charlestown in Clark Co. and Lawrenceburg in Dearborn Co.*

Thank You!